Comments

EPA HQ - Auxiliary Ash Pond Report, Page 2-1: Third paragraph, first sentence, correct.

EPA Region – None.

State – See attachment from email dated January 28, 2010.

Company – See attached letter dated February 16, 2010.

From: "Phelps, Scott (EEC)" <Scott.Phelps@ky.gov>
To: James Kohler/DC/USEPA/US@EPA
Date: 01/28/2010 09:20 AM
Subject: Comments from Kentucky on Ash Pond Reports

James
I am attaching our comments on the draft reports that were sent to me. It is my understanding that Gary Wells with our office has already supplied comments on the LG&E Mill Creek impoundment. Let me know if you need further clarification or anything else.

Scott Phelps P.E., C.F.M., Supervisor
Dam Safety and Floodplain
Compliance Section
Water Infrastructure Branch

Attachment:

Comments on Ash Pond inspections located within Kentucky.

General: Kentucky would like to correct a statement made in several of the draft reports. Many of the reports state that Kentucky does not have standards for dam stability. This statement is incorrect and should be corrected in all reports. The standards are clearly stated in "Guidelines for the Geotechnical Investigation and Analysis of Existing Earth Dams". This publication is located on our website and available for download. The necessary factors of safety are found on page 25. The web address for the document is: http://www.water.ky.gov/damsafety/dsdownloads/

E.W. Brown Aux Pond.

The statement that the ash pond has a permit number KYDW Permit 1213 is incorrect. The Kentucky Division of Water has assigned dam ID number KY1213 to this structure. This is the number that the structure can be found under in the NID.

E.W. Brown Main Pond

3.2 Summary of Local, State and Federal Environmental Permits:
The statement that the ash pond has a permit number KYDW Permit 0737 is incorrect. The Kentucky Division of Water has assigned dam ID number KY0737 to this structure. This is the number that the structure can be found under in the NID.

Kentucky Utilities Ghent Power Plant

1.2.1 There is no mention of permits issued by the Kentucky Division of Water for Construction of ATB 2 or the Gypsum Stacking Facility.

3.3 Structural Adequacy & Stability

The statement that Kentucky regulations and guidelines for dam safety do not provide specific factors of safety for slope stability is incorrect. The standards are clearly stated in "Guidelines for the Geotechnical Investigation and Analysis of Existing Earth Dams". This publication is located on our website and available for download. The necessary factors of safety are found on page 25. The web address for the document is: http://www.water.ky.gov/damsafety/dsdownloads/

LG&E Cane Run

The map on page 9 indicates the wrong plant and places the plant in Indiana.

3.3 Structural Adequcy & Stability

The statement that Kentucky regulations and guidelines for dam safety do not provide specific factors of safety for slope stability is incorrect. The standards are clearly stated in "Guidelines for the Geotechnical Investigation and Analysis of Existing Earth Dams". This publication is located on our website and available for download. The necessary factors of safety are found on page 25. The web address for the document is: http://www.water.ky.gov/damsafety/dsdownloads/

4.1 Acknowledement of Management Unit Condition

Big Rivers Coleman Plant

3.3 Structural Adequacy & Stability

The statement that Kentucky regulations and guidelines for dam safety do not provide specific factors of safety for slope stability is incorrect. The standards are clearly stated in "Guidelines for the Geotechnical Investigation and Analysis of Existing Earth Dams". This publication is located on our website and available for download. The necessary factors of safety are found on page 25. The web address for the document is: http://www.water.ky.gov/damsafety/dsdownloads/

Big Rivers Reid, Green, HMPL

No comments from Kentucky Division of Water.

American Electric Power Big Sandy Generating Station

P.1 Company or Organization
The Kentucky Department of Natural Resources is a different agency than the Department for Environmental Protection. DEP is the correct agency for Scott Phelps.

3.3 Structural Adequacy & Stability

The statement that Kentucky regulations and guidelines for dam safety do not provide specific factors of safety for slope stability is incorrect. The standards are clearly stated in "Guidelines for the Geotechnical Investigation and Analysis of Existing Earth Dams". This publication is located on our website and available for download. The necessary factors of safety are found on page 25. The web address for the document is: http://www.water.ky.gov/damsafety/dsdownloads/

Generation Engineering
220 West Main Street
Louisville, Kentucky 40202
1-502-627-2985

VIA E-MAIL AND OVERNIGHT DELIVERY

Mr. Stephen Hoffman
U.S. Environmental Protection Agency
Two Potomac Yard
2733 South Crystal Drive
Fifth Floor, N-5237
Arlington, VA 22202-2733

Date: February 16, 2010

Re: Kentucky Utilities Comments for
***DRAFT Coal Combustion Waste Impoundment Task 3 – Dam Assessment Report, E.W. Brown Plant, Auxiliary Ash Dam Complex*, Prepared by Dewberry, November 2009 and**
***DRAFT Coal Combustion Waste Impoundment Task 3 – Dam Assessment Report, E.W. Brown Plant, Main Fly Ash Pond Dam*, Prepared by Dewberry, November 2009**

Dear Mr. Hoffman:

The U.S. Environmental Protection Agency (EPA) provided two draft reports to Kentucky Utilities Company (KU) regarding the Main Pond and Auxiliary Pond at KU's E. W. Brown Station. The draft reports were prepared by Dewberry and dated November 2009. This letter provides the comments from KU for the Main Pond and Auxiliary Pond included as two attachments.

Thank you for the opportunity to comment. If you have any questions regarding these comments, please contact me.

Thank you,

David J. Millay

David Millay, PE
Civil Engineer
502-627-2468

Attachments
Cc: James Kohler, U.S. Environmental Protection Agency
John Voyles, E.ON U.S.
Michael Winkler, E.ON U.S.

Kentucky Utilities Comments for *DRAFT Coal Combustion Waste Impoundment Task 3 – Dam Assessment Report, E.W. Brown Plant, Auxiliary Ash Dam Complex,* Prepared by Dewberry, November 2009

Global name change on title page and in report footers:
"Auxiliary ~~*Ash*~~ Pond Dam ~~*Complex*~~"

Note: Kentucky Utilities (KU) refers to the impoundment facility as the Auxiliary Pond. The impoundment is designed to manage fly ash, bottom ash, pyrites, flue gas desulphurization residuals, and other process waters.

Front cover and footer:
"~~*E.ON U.S. LLC*~~ KENTUCKY UTILITIES"

Note: KU, a subsidiary of E.ON U.S., is the owner and operator of the E.W. Brown Plant.

Page i, section *INTRODUCTION, SUMMARY CONCLUSIONS AND RECOMMENDATIONS*
Second paragraph, first sentence:
"This assessment of the stability and functionality of the E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam management…"

Third paragraph, first sentence:
"In summary, the E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam is SATISFACTORY…"

Page i, section *PURPOSE AND SCOPE*
Second paragraph, First sentence:
"In ~~*February*~~ March 2009, the EPA sent letters to coal-fired electric utilities…"

Page 1-1, section *1.1 CONCLUSIONS*
First sentence:
(toward end) "…and review of technical documentation provided by ~~*E.ON U.S. LLC*~~ KU."

Page 1-1, section *1.1.4 Conclusions Regarding the Description of the Management Unit(s)*
First sentence:
"The description of the management unit provided by ~~*E.ON U.S. LLC*~~ KU was an accurate representation…"

Page 1-2, section *1.1.7 Conclusions Regarding the Adequacy of the Surveillance and Monitoring Program*
First sentence:
"No instrumentation was designed for phase 1 of the Auxiliary Pond. The surveillance and monitoring program appears to be adequate. Plant personnel monitor the ~~*instrumentation*~~ pond on a weekly basis."

Note: The Auxiliary Pond is a two phase project. Phase one is complete and phase two is scheduled to begin construction in the spring of 2010. The engineer of record is evaluating the instrumentation program for phase two.

Page 1-2, section *1.2.2 Recommendations Regarding the Hydrologic/Hydraulic Safety*
Second paragraph, first and last sentence:
(toward end) "…2006 Dam Construction Permit Application, ~~*E.ON*~~ KU indicated that such…"

(toward end) "…is being conducted as part of the development of an Impoundment Emergency ~~*Operating*~~ Action Plan."

Note: A dam breach analysis for the Auxiliary Pond was completed in November of 2009, and incorporated into an Impoundment Emergency Action Plan for the Auxiliary Pond in January 2010.

Page 1-3, section *1.2.6 Recommendations Regarding the Maintenance and Methods of Operation*
Bulleted item beneath fFirst paragraph:

- ~~*Monitor, address or otherwise repair minor erosion areas and erosion gullies, and isolated seepage spots.*~~
- Monitor isolated seepage spot.
- Address minor erosion areas and erosion gullies.

Note: Reformat the bullets listed above.

Page 1-3, section *1.2.7 Recommendation Regarding the Surveillance…*
First sentence:
"Continue monitoring the seepage location~~s~~"

Page 1-3, section *1.3.1 List of Participants*
The following two names need changes:
"Jeffrey Fraley – KU
Tamara Lay – KU"

Page 2-1, section *2.1 LOCATION AND GENERAL DESCRIPTION*
First paragraph, second and third sentence:
"The plant is operated by Kentucky Utilities Company, a ~~*subdivision*~~ subsidiary of E.ON U.S. LLC (E.ON)."

"The Auxiliary ~~*Ash*~~ Pond Dam is at the south side of the plant site, adjacent to the Main ~~*Ash pond*~~ Pond."

Second paragraph, first, third and fourth sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam is a rock and earth fill dam constructed adjacent to the existing Main ~~*Ash*~~ Pond."

"The pond bottom and the embankment are lined with ~~*a 4 foot thick layer*~~ an 18 inch thick layer of clay on the bottom and 4 foot layer of compacted clay on the upstream slope ~~of compacted clay~~…"

"The crest and upper portion of the upstream slope are…"

Third paragraph, second and third sentence:
"The Auxiliary ~~*Ash*~~ Pond is scheduled to receive both fly ash and bottom ash during the current phase of construction to expand the adjacent, temporarily out of service Main ~~*Ash*~~ Pond."

"The current construction phase at the Main ~~*Ash*~~ Pond is scheduled for…"

Fourth paragraph:
(toward the middle) "…and from borrow areas surrounding the Main ~~*Ash*~~ Pond ~~*adjacent to the north side of the Auxiliary Ash Pond*~~, and one borrow area adjacent to the south side of the Auxiliary ~~*Ash*~~ Pond."

Page 2-2, section *2.2 SIZE AND HAZARD CLASSIFICATION*
First paragraph, second sentence:
"However, based on the planned expansion of the Auxiliary ~~*Ash*~~ Pond, the dam will eventually be classified as "Large"."

Second paragraph, first sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam has been classified by the Kentucky Department for the Environmental ~~*Control*~~ Protection, Division of Water…"

Page 2-3, *Table 2.3: Amount of Residuals and Maximum Capacity of Unit*
Title of column:
"E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam"

Page 2-3, section *2.4.1 Earth Embankment Dam*
First paragraph, first and third sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam is a rock and earth fill dam constructed adjacent to the existing Main ~~*Ash*~~ Pond."

"The pond bottom is lined with an 18 inch thick layer of compacted clay and the upstream slope of the embankment is lined with a 4 foot thick layer of compacted clay covered…"

Second paragraph, first and sixth sentence:
"The Auxiliary ~~*Ash*~~ Pond ~~*dam*~~ Dam was constructed as the first of two phases."

"Table 2.4.1 displays a summary of the dimensions and size specifications of E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam."

Page 2-4, *Table 2.4.1: Summary of Dam Dimensions and Size*
Title of column:
"E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam"

Page 2-4, section *2.4.2 Outlet Structures*
First paragraph, first and second sentence:
(toward end) "…that run along the toe of the embankment approximately 3,200 feet to the existing Main ~~*Ash*~~ Pond discharge channel."
"The discharge channel empties into ~~*an unnamed tributary of*~~ Herrington Lake."

Note: The discharge channel empties directly into Herrington Lake.

Page 2-4, section *2.5 CRITICAL INFRASTRUCTURE WITHIN FIVE MILES DOWN GRADIENT*
First paragraph, first and second sentence:
(toward end) "…serving the E.W. Brown generating station, the Dix ~~*River*~~ Dam and local roadways~~,~~."
Note: Replace comma at end of sentence with period.

"Also at risk are residences along the bank of the ~~*Dix River/Lake*~~ Herrington Lake in the vicinity of the plant."

Page 3-1, section *3.1 SUMMARY OF REPORTS ON THE SAFETY OF THE MANAGEMENT UNIT*
First paragraph, first sentence:
"In response to an EPA ~~Freedom of Information~~ request pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in September of 2009, the facility owner, ~~*E.ON U.S., LLC*~~ KU provided an extensive package of design and construction information for the E.W. Brown Auxiliary ~~*Ash*~~ Pond ~~*dam*~~ Dam."

Second paragraph, First sentence, and bulleted items below paragraph:
"KU retained ATC Associates Inc. to conduct an inspection of the Auxiliary ~~*Ash*~~ Pond Dam."

- Repair reported leaks and principal spillway manholes below toe of dam
- Monitor seep at south property line

Note: Reformat the bullets listed above. The Company completed the repairs on the manhole leaks in the spring of 2009. After the repairs were completed, the water seepage south of the property line ceased.

Page 3-1, section *3.2 SUMMARY OF LOCAL, STATE AND FEDERAL ENVIRONMENTAL PERMITS*
First paragraph, third sentence:
"~~*As the dam was completed in 2008 the initial State inspection is not scheduled to occur until 2010.*~~ The Kentucky Division of Water (KDOW) inspected the dam after construction was completed in June 2008. The state concluded that the dam was constructed in accordance with the permitted design and granted an approval to impound. The next KDOW inspection is expected in 2010."

Second paragraph, first sentence and additional information following third sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond spillway discharge is permitted under ~~*NODES*~~ KPDES Permit No. 0002020 which expired January 31, 2007. The permit remains in effect under applicable state regulations."
"A permit renewal is expected late in 2009 or early 2010.

Note: A new permit has been issued and will be effective on March 1, 2010.

Page 4-1, section *4.1 Original Construction*
First paragraph, first sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond ~~*dam*~~ Dam was completed in 2008…"

Page 4-1, section *4.2.1 Original Operational Procedures*
First , First and second sentence:
(toward end) "…plant for a period of about three years during which time the Main ~~*Ash pond*~~ Pond will be expanded."

"The Main ~~*Ash pond*~~ Pond is currently out of service, and all fly ash and bottom ash from the plant is being sluiced to the ~~*auxiliary pond*~~ Auxiliary Pond."

Second paragraph, first and second sentence:
"When the current phase of the Main ~~*Ash pond*~~ Pond expansion is completed, fly ash will be rerouted to the ~~*main pond*~~ Main Pond and bottom ash will continue to be placed in the Auxiliary ~~*Ash pond*~~ Pond."

"Also after the completion of phase one of the ~~*main pond*~~ Main Pond expansion, the completed ~~*auxiliary pond*~~ Auxiliary Pond phase two expansion will provide additional bottom ash storage capacity."

Page 5-1, caption below *Figure 5.2.1-1*
"Figure 5.2.1-1. Photo Showing the Dam Crest~~.~~ at the southeast corner."

Note: Remove period after Crest and add "at the southeast corner." to finish caption.

Page 5-4, *Figure 5.2.3-2*

Note: A wet area measuring approximately 2 foot by 3 foot was observed. No flowing water was observed.

Page 5-5, section *5.3.1 Overflow Structure*
First paragraph, first sentence:
"The dam has a concrete decant riser 10 ft. square with invert elevation at 870.12 feet and a 30-inch diameter HDPE pipe running approximately 240 feet through the embankment, connecting to a network of HDPE pipes that run along the toe of the embankment approximately 3,200 feet to the existing Main ~~*Ash*~~ Pond discharge tunnel."

Page 5-7, section *5.3.2*
"5.3.2 ~~*Outlet Conduit*~~ KPDES Discharge Weir and Sampling Point

The ~~*outlet conduit*~~ discharge weir appeared to be in good shape and operating normally with no sign of clogging and the water exiting the ~~*outlet*~~ weir was flowing clear. Figure 5.3.2-1 shows the water discharging from the main spillway ~~*tunnel*~~ outfall."

Caption below *Figure 5.3.2-1*
"Figure 5.3.2-1. Main Spillway ~~*Tunnel*~~ Weir Outfall."

Page 6-1, section *6.1.2 Inflow Design Flood*
First paragraph, first sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam is classified by the …"
Note: Add Period after 'w' of E.W. Brown.

Second paragraph, first and second sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam Construction Permit Application document includes…"
(toward end) "…Engineering Center Hydrologic Modeling System (~~*HED-HMS*~~ HEC-HMS V3.0.1) software."

Page 6-2, section *6.1.4 Downstream Flood Analysis*
First sentence:
"A downstream flood analysis was not performed as part of the E.W. Brown Auxiliary ~~*Ash*~~ Pond ~~*dam*~~ Dam design."

Note: A dam breach analysis for the Auxiliary Pond was completed in November of 2009.

Page 6-2, section *6.3 ASSESSMENT OF HYDROLOGIC/HYDRAULIC SAFETY*
First paragraph, first sentence:
(toward middle) "…calculations (Appendix A- Doc 02 and Doc 84),the E.W. Brown Auxiliary ~~*Ash*~~ Pond Phase I Dam…"

Second paragraph:
(toward middle) "… also indicate that the E.W. Brown Auxiliary ~~*Ash*~~ Pond Phase 2…"

Page 7-1, section *7.1.1 Stability Analyses and Load Cases Analyzed*
First paragraph, end of first, second and third sentence:
"…procedures used in the dam design~~,~~."

Note: Replace comma at end of sentence with period.

"…"Dam Construction Permit Application Auxiliary ~~*Ash*~~ Pond – E.W. Brown Generating Station")."

"…was concluded that the Auxiliary ~~*Ash*~~ Pond Dam has stability safety factors at or above minimum recommended values."

Page 7-1, section *7.1.2 Design Properties and Parameters of Materials*
First paragraph, first sentence:
(toward middle) "…dam design shown in drawings of the Auxiliary ~~*Ash*~~ Pond Stability Analysis…"

Page 7-1, section *7.1.3 Uplift and/or Phreatic Surface Assumptions*
First paragraph, second sentence:
"The Auxiliary ~~*Ash*~~ Pond ~~and~~ upstream slope of the embankment ~~and the pond bottom~~ ~~are~~ is lined with a 4-foot thick compacted clay zone and the pond bottom is lined with an 18-inch thick compacted clay zone capped by…"

Page 7-2, section *7.1.4 Factors of Safety and Base Stresses*
First paragraph, first sentence:
"The Auxiliary ~~*Ash*~~ Pond Dam – Stability Analysis…"

Second paragraph, first sentence:
"Based on the results summarized in the table, the Auxiliary ~~*Ash*~~ Pond Dam was found to have…."

Table Title:
"Table 7.1.4: Factors of Safety E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam"

Page 7-2, section *7.1.6 Critical Geological Conditions and Seismicity*
First paragraph, sentence one:
(toward middle) "…indicate the E.W. Brown Auxiliary ~~*Ash*~~ Pond is underlain by rock of the Lexington, and Tyrone Limestone formations."

Second paragraph, first and third sentence:
"The foundation for the Auxiliary ~~*Ash*~~ Pond embankment and liner consists of a…"

"At the northeast corner of the Auxiliary ~~*Ash*~~ Pond, near the existing Main ~~*Ash*~~ Pond embankment, overburden was removed to…"

Page 8-1, section *8.1 OPERATIONAL PROCEDURES*
First paragraph, fourth and fifth sentence:
"A separate written Operations Plan for the Auxiliary ~~*Ash*~~ Pond has been completed."

"The Auxiliary ~~*Ash*~~ Pond is being operated under the operating procedures established for the Main ~~*Fly Ash*~~ Pond."

Second paragraph, second sentence:
"The facility ~~*NPDES*~~ KPDES permit (KY0002020) has expired. The permit remains in effect under applicable state regulations. "

Note: A new permit has been issued and will be effective on March 1, 2010.

Page 9-1, section *9.1.1 Surveillance Inspections*
First paragraph, first sentence:
"Surveillance inspections of the Auxiliary ~~*Ash*~~ Pond are conducted in accordance with the requirements established for the Main ~~*Fly Ash*~~ Pond."

Page 9-1, section *9.1.2 Annual Inspections*
First paragraph, first sentence:
"The Auxiliary ~~*Ash*~~ Pond is scheduled for inspection by the Kentucky Division of Water on a ~~*biannual*~~ biennial basis."

Bulleted items below second paragraph:

- Repair reported leaks and principal spillway manholes below toe of dam
- Monitor seep at south property line

Note: Reformat bullets listed above. The Company completed the repairs on the manhole leaks in the spring of 2009. After the repairs were completed, the water seepage south of the property line ceased.

Page 9-1, section *9.2 INSTRUMENTATION MONITORING*
First sentence:
"The E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam has no instrumented monitoring system…"

Page 9-1, section *9.3.2 Adequacy Instrumentation Monitoring Program*
First sentence:
(toward end) "..about three years between Phase 1 and Phase 2 construction, ~~*the current lack of*~~ an instrumented monitoring system for the Auxiliary ~~*Ash*~~ Pond is ~~*considered appropriate*~~ not necessary at this time."

Note: The Auxiliary Pond is a two phase project. Phase one is complete and phase two is scheduled to begin construction in the spring of 2010. The engineer of record is evaluating the need for instrumentation for phase two.

Appendix C - COAL COMBUSTION DAM INSPECTION CHECKLIST FORM
E.W. Brown Generating Station – Auxiliary ~~*Ash*~~ Pond
Date: ~~*October 26, 2009*~~ October 20, 2009

Note: Engineers from Dewberry conducted the site assessment on the Auxiliary Pond on October 20, 2009.

Kentucky Utilities Comments for *DRAFT Coal Combustion Waste Impoundment Task 3 – Dam Assessment Report, E.W. Brown Plant, Main Fly Ash Pond Dam*, Prepared by Dewberry, November 2009

Note: There two pages noted "iv".

Global name change:
"Main ~~*Fly Ash*~~ Pond"

Note: Kentucky Utilities (KU) refers to the impoundment facility as the Main Pond. The impoundment is designed to manage fly ash, bottom ash, pyrites, flue gas desulphurization residuals, and other process waters.

Front cover and footer:
"~~*E.ON U.S. LLC*~~ KENTUCKY UTILITIES"

Page ii, section *INTRODUCTION*
Second paragraph, first sentence:
"This assessment of the stability and functionality of the E.W. Brown Main ~~*Fly Ash*~~ Pond Dam management unit is based on a review…"

Third paragraph:
"In summary, the E.W. Brown Main ~~*Fly Ash*~~ Pond Dam is SATISFACTORY for continued safe and reliable operation…"

Fourth paragraph:
"The assessment of E.W. Brown Auxiliary ~~*Ash*~~ Pond Dam is presented…"

PAGE 1-1, section*1.1.1 CONCLUSIONS REGARDING THE STRUCTURAL SOUNDNESS OF THE MANAGEMENT UNIT(S)*
Second paragraph, first and third sentence:
"The Main ~~*Fly Ash*~~ Pond had been taken out of service prior

"The Main ~~*Fly Ash*~~ Pond had been ~~*drained*~~ de-watered and the emergency spillway abandoned using procedures prescribed by the design engineer of record."

Third paragraph, first sentence:
"…and hydrologic/hydraulic characteristic of the expanded and reconfigured Main ~~*Ash*~~ Pond."

PAGE 1-1, section *1.1.2 CONCLUSIONS REGARDING THE HYDROLOGIC/HYDRAULIC SAFETY OF THE MANAGEMENT UNIT(S)*
First and fourth sentence:
"The E.W. Brown Main ~~*Fly Ash*~~ Pond has been ~~*drained*~~ de-watered and taken out of service."

"A new primary spillway is under construction at an alternate location within the footprint of the reconfigured Main ~~*Fly Ash*~~ Pond."

Kentucky Utilities Comments

***DRAFT Coal Combustion Waste Impoundment Task 3 – Dam Assessment Report, E.W. Brown Plant, Main Fly Ash Pond Dam*, Prepared by Dewberry, November 2009**

PAGE 1-1, section *1.1.3 CONCLUSIONS REGARDING THE ADEQUACY OF SUPPORTING TECHNICAL DOCUMENTATION*
Second sentence:
"Although documentation of the existing embankment is somewhat limited, the design documentation for the Main ~~*Fly Ash*~~ Pond incorporates…"

Note: KU provided Dewberry with as constructed drawings for the 1990 Main Pond Expansion. The 1990 Main Pond Expansion design included a geotechnical exploration program that evaluated the existing dam. The engineer of record incorporated the findings from the geotechnical exploration program into the design of the 1990 expansion.

PAGE 1-2, section *1.1.6 CONCLUSIONS REGARDING THE ADEQUACY OF MAINTENANCE* AND METHODS OF OPERATION
First sentence:
"The current maintenance and methods of operation appear to be adequate for the ~~*fly ash*~~ management unit."

Note: The Main Pond is designed to manage fly ash, bottom ash, flue gas desulphurization residuals, pyrites, and other process waters.

PAGE 1-2, *1.1.7 CONCLUSIONS REGARDING THE ADEQUACY OF THE SURVEILLANCE AND MONITORING PROGRAM*
Second sentence:
"A new surveillance and monitoring program is planned for implementation when the reconfigured Main ~~*Fly Ash*~~ Pond is put back into service."

PAGE 1-2, section *1.1.8 CLASSIFICATION REGARDING SUITABILITY FOR CONTINUED SAFE AND RELIABLE OPERATION*
First paragraph, first sentence:
"The E.W. Brown Main ~~*Fly Ash*~~ Pond facility is currently out of operation and important components, including the emergency spillway, have been abandoned using procedures prescribed by the design engineer of record."

Second paragraph, first sentence:
"Analyses conducted in conjunction with the expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond indicate that the existing ash, on which the ~~*new embankments are supported*~~ existing north embankment is constructed, is subject to liquefaction if groundwater elevation is above 856 feet."

Page 1-3, section *1.2.6 RECCOMENDATIONS REGARDING THE MAINTENANCE AND METHODS OF OPERATION*
First paragraph, first sentence:
"…to reopening the reconfigured Main ~~*Fly Ash*~~ Pond …"
Note: The engineer of record for the Main Pond expansion is developing a new operations plan.

Page 1-4, listed under *1.3.1 LIST OF PARTICIPANTS*
"Jeffrey Fraley – ~~*E.ON U.S. LLC*~~ KU"
"Tamara Lay - ~~*E.ON U.S. LLC*~~ KU"

Page 2-1, section *2.1 LOCATION AND GENERAL DESCRIPTION*
Paragraph 1, first and third sentence:
"The E. W. Brown Plant…"

"The Main ~~*Fly Ash*~~ Pond Dam is at the ~~*west*~~ southwest side of the plant site, adjacent to the Auxiliary ~~*Fly Ash*~~ Pond."

Page 2-1, section *2.1 LOCATION AND GENERAL DESCRIPTION*
Second paragraph, first sentence:
"The E.W. Brown existing Main ~~*Fly Ash*~~ Pond Dam is a compacted…"

Page 2-1, section *2.1 LOCATION AND GENERAL DESCRIPTION*
Third paragraph, first, fourth and sixth sentence:
"Construction has begun on the first phase of a multi-phased expansion of the Main ~~*Fly Ash*~~ Pond."

"When the Main ~~*Fly Ash*~~ Pond is put back into service…"

"The starter dike and planned subsequent expansions are supported on existing de-watered and stabilized ash materials."

Page 2-1, section *2.2 SIZE AND HAZARD CLASSIFICATION*
First paragraph, first sentence:
"The existing Main ~~*Fly Ash*~~ Pond Dam is on the ~~*west*~~ southwest side of the E.W. Brown generating station."

Page 2-1, section *2.2 SIZE AND HAZARD CLASSIFICATION*
Third paragraph, first sentence:
"The E.W. Brown Main ~~*Fly Ash*~~ Pond dam is classified by…"

Page 2-2, First paragraph, second sentence:
"This classification definition is similar to "~~*Significant*~~ High" classification per…"

Page 2-2, section *2.3 AMOUNT AND TYPE OF RESIDUALS CURRENTLY CONTAINED…*
First paragraph, second and fourth sentence:
"Data on the volume of residuals stored in the Main ~~*Fly Ash*~~ Pond at the time…"

"The current volume of ash stored in the Main ~~*Fly Ash*~~ ~~*p*~~Pond was not provided."

Second paragraph, first sentence:
"The existing Main ~~*Fly Ash*~~ Pond has been taken out of services."

Third paragraph, last sentence:
"The total storage capacity of the Main ~~*Fly Ash*~~ Pond for each phase…"

Page 2-3, *Table 2.3-2* title:
"Storage Capacity of Reconfigured Main ~~*Fly Ash*~~ Pond for Each Phase"

Page 2-3, first sentence, paragraph 1 under *2.4.1 Earth Embankment Dam*:
First paragraph, first and seventh sentence:
"The existing Main ~~*Fly Ash*~~ Pond Dam is a soil and rock fill dam…"

"Table 2.4.1-1 displays a summary of dimensions and size specification for the E.W. Brown Main ~~*Fly Ash*~~ Pond Dam."

Page 2-3, *Table 2.4.1-1: Summary of Dam Dimensions and Size*

Side Slopes (upstream)	~~*2:1*~~ 2.5:1
Side Slopes (downstream)	~~*2:1*~~ 2.5:1

Note: See sheet 24 of 71 of the 1990 Main Pond Expansion drawings.

Page 2-3, paragraph under *Table 2.4.1-1: Summary of Dam Dimensions and Size*
" "As constructed" embankment cross-sections of the Main ~~*Fly Ash*~~ Pond Dam 1990 expansion…"

Page 2-4, first paragraph, first and second sentence:
"The existing Main ~~*Fly Ash*~~ Pond had a principal spillway and …"

"Since the facility has been taken out of service and drained de-watered, the emergency spillway had been abandoned using procedures prescribed by the design engineer of record."

Page 2-4, section *2.5 CRITICAL INFRASTRUCTURE…*
Second paragraph, first and second sentence:
(toward the end of sentence 1) "…serving the E.W. Brown generating station, the Dix ~~*River*~~ Dam and local roadways."

"Also at risk are residences along the bank of the ~~*Dix River/Lake*~~ Herrington Lake in the vicinity of the plant."

Page 3-1, section *3.1 SUMMARY OF REPORTS ON THE SAFETY…*
First paragraph, first and third sentence:
(toward end of sentence)"…performance monitoring data and past inspection documents for the E.W. Brown Main ~~*Fly Ash*~~ Pond Dam."

"Reports directly relevant to the safety of the Main ~~*Fly Ash*~~ Pond Dam are summarized below."
Second paragraph, first sentence:
"The Kentucky Division of Water inspected the Main ~~*Fly Ash*~~ Pond Dam on July…"

Third paragraph, first sentence:
"KU retained ATC Associates, Inc to conduct an inspection of the existing Main ~~*Fly Ash*~~ Pond Dam in 2009."
Reformat bullets under paragraph three:

- Crest
  - Small washout area under sprinkler line
  - Small depression where drawdown pipe trench was backfilled
  - Two irregularities in width of crest on upstream slope of east embankment
- Seepage:
  - Minor amount of seepage at the north abutment
  - Wet area at toe of east slope

Page 3-1, section *3.2 SUMMARY OF LOCAL, STATE AND FEDERAL…*
First paragraph, second sentence:
"Kentucky inspects the dam on a ~~*biannual*~~ biennial basis."

Second paragraph, first and added last sentence:
"The E.W. Brown Main ~~*Fly Ash*~~ Pond spillway discharge is permitted under ~~*NPDES*~~ KPDES Permit No. 0002020 which expired January 31, 2007." The permit remains in effect under applicable state regulations.

Note: A new permit has been issued and will be effective on March 1, 2010.

Page 4-1, section *4.1.1 ORIGINAL CONSTRUCTION*
First paragraph, second sentence:
"However, it is understood that initial construction of the Main ~~*Fly Ash*~~ Pond was prior to 1970."

Second paragraph, first sentence:
"Drawings summarizing the results of stability analyses for the expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond dam include schematic representation of the existing dam."

Note: Formatting for bullets under paragraph two:

- Original Embankment with a crest elevation of approximately 830 feet.
- 1970's Embankment with a crest elevation of approximately 870 feet.
- 1990's Embankment with a crest elevation of 900 feet.

Page 4-1, section *4.1.2 SIGNIFICANT CHANGES/MODIFICATIONS IN DESIGN…*
First paragraph, first and fourth sentence:
"According to the information included in the design report in Appendix A: Doc 02, the Main ~~*Fly Ash*~~ Pond was expanded multiple times…"

"The area will be the base of planned future expansion of the starter dike from an initial crest elevation of 902 feet to a final crest elevation of ~~*952*~~ 962 feet."

Second paragraph, first, second, fifth and sixth sentence
"The starter dike as well as subsequent planned phases of expansion is supported on de-watered and stabilized fly ash in the pond."
"Liquefaction analyses in the Design Report (See Appendix A: Doc 2) indicate a potential for liquefaction ~~*in*~~ of the ash under the existing north embankment if groundwater is above 856 feet."

"Current construction includes installation of monitoring wells beneath the ~~*starter*~~ existing north dike to monitor groundwater…"

"If the groundwater elevation has not dropped below elevation 856 or lower, a drainage system will be installed to lower the groundwater elevation and stabilize the existing embankment against…"

Page 4-2, section *4.2.1 ORIGINAL OPERATIONAL PROCEDURES*
Second and fourth sentence of paragraph:
"The Main ~~*Fly Ash*~~ Pond has been operated…"

"New operating procedures, including an Emergency ~~*Operations*~~ Action Plan, are being developed…"

Note: A dam breach analysis for the Main Pond was completed in November of 2009, and incorporated into an Impoundment Emergency Action Plan for the Main Pond in January 2010.

Page 4-2, section *4.2.3 CURRENT OPERATIONAL PROCEDURES*
First and last sentence of paragraph
"The Main ~~*Fly Ash*~~ Pond is currently out of service."

"Coal combustion waste material is currently being sent to the Auxiliary ~~*Ash*~~ Pond during the ongoing expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond."

Page 5-1, section *5.2.1 CREST*
Second sentence of paragraph:
"Figure 5.2.1-1 shows the crest of the existing Main ~~*Fly Ash*~~ Pond Dam."

Page 5-1, caption beneath *Figure 5.2.1-1*:
"Crest of Main ~~*Fly Ash*~~ Pond Dam Looking ~~*Westward*~~ Southward."

Page 5-2, section *5.2.2 UPSTREAM SLOPE*
Added sentence following the first:
"The upstream slope mostly consists of unprotected compacted soil. "

Note: Supplemental soil material was placed on the upstream slope over shot rock into the pond during pipe installation.

Second sentence of paragraph:
"Figure 5.2.2-1 show the upstream slope of the existing embankment on the ~~*south*~~ east side of the impoundment."

Page 5-3, caption beneath *Figure 5.2.3-1*:
"Downstream Slope at the ~~*Southeast*~~ Northeast Side of Impoundment."

Page 5-6, section 5.3.2 title:
"**5.3.2 ~~*Emergency*~~ Secondary Spillway**"

Page 5-6, section *5.3.2 ~~Emergency~~* Secondary Spillway
First paragraph:
"The existing emergency spillway has been abandoned using procedures prescribed by the design engineer of record. ~~*The new emergency spillway for the reconfigured Main Fly Ash Pond is piped spillway in to the adjacent Auxiliary Fly Ash Pond.*~~ Figure 5.3.2-1 shows ~~*the new emergency*~~ a new secondary spillway discharge end at the Auxiliary ~~*Fly Ash*~~ Pond."

Note: The new pond does not have an emergency spillway. The pipe shown is a secondary spillway, which provides a backup discharge outlet in case the primary spillway malfunctions.

Page 5-6, caption beneath *Figure 5.3.2-1:*
"~~*New Emergency*~~ Secondary Spillway from Reconfigured Main ~~*Fly Ash*~~ Pond to Auxiliary ~~*Fly Ash*~~ Pond (Discharge End Shown)"

Page 6-1, section *6.1.3 Spillway Rating*
Second paragraph:
"The existing emergency spillway has been abandoned using procedures prescribed by the design engineer of record."

Third paragraph:
"Hydraulic and hydrologic data provided for the expanded and reconfigured Main ~~*Fly Ash*~~ Pond indicates that both the starter dike and final configuration can pass the PMP without overtopping. The data indicates the starter dike freeboard at the Probable Maximum Precipitation (PMP) ~~*the starter dike*~~ is 1.4 feet and at the final embankment configuration freeboard is 1.5 feet (see Appendix A:Doc. 43)."

Page 6-1, section *6.1.4 Downstream Flood Analysis*
First sentence:
"A downstream flood analysis was not performed as part of the E.W. Brown Main ~~*Fly Ash*~~ Pond dam design."

Note: A dam breach analysis for the Main Pond was completed in November of 2009.

Page 6-1, section *6.2 ADEQUACY OF SUPPORTING TECHNICAL DOCUMENTATION*
First sentence:
"Supporting technical documentation is inadequate to assess the ~~*existing*~~ original facility, but the design for the 1990 main pond extension included a geotechnical exploration program that evaluated the existing dam and whose findings were incorporated into the design of the 1990 extension."

Note: KU provided Dewberry with as constructed drawings for the 1990 Main Pond Expansion. The 1990 Main Pond expansion design included a geotechnical exploration program that evaluated the existing dam. The engineer of record incorporated the findings from the geotechnical exploration program into the design of the 1990 expansion.

Page 6-2, section *6.3 ASSESSMENTS OF HYDROLOGIC/HYDRAULIC SAFETY*
First paragraph, first sentence:
"The original hydrology/hydraulic assessment used for the design of the Main ~~*Fly Ash*~~ Pond was not included in the reviewed documents."

Second paragraph, first sentence:
"The reconfigured facility includes a new primary spillway and new ~~*emergency*~~ secondary spillway."

Page 7-1, section *7.1.1 Stability Analyses and Load Cases Analyzed*
First paragraph, first and second sentence:
"The reviewed documents did not include the original stability analysis, design calculations or field measurements for the existing Main ~~*Fly Ash*~~ Pond."

"However, the design report for the expansion of the Main ~~*Fly Ash*~~ Pond currently underway…"

Page 7-1, section*7.1.3 Uplift and / or Phreatic Surface Assumptions*
First paragraph, second sentence
"The reconfigured Main ~~*Fly Ash*~~ Pond and new embankment upstream slope of the embankment are lined with a ~~*4 ft.*~~ 2-ft. thick clay zone…"

Second paragraph, only sentence:
"In the stability analysis section of the design report for the proposed expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond (see Appendix…"

Page 7-2, section *7.1.4 Factors of Safety and Base Stresses*
Second paragraph, first sentence:
"In the stability analysis section of the design report for the proposed expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond (see Appendix…"

Page 7-2, Notes below *Table 7.1.4: Factors of Safety E.W. Brown Main Fly Ash Dam (Note 1)*
"1 – Results are for Main ~~*Fly Ash*~~ Dam in final proposed…"
"2 – Shallow failure surface is contained within existing Main ~~*Fly Ash*~~ Pond embankment."

Page 7-3, first sentence of top paragraph, a continuation from the previous page:
"The design report for the expansion and reconfiguration of the Main ~~*Fly Ash*~~ Pond (see Appendix A – Doc 02) includes an evaluation of liquefaction potential for fly ash underlying the ~~*planned new*~~ existing north embankment~~s~~."

Page 7-3, *7.1.6 Critical Geological Conditions and Seismicity*:
First paragraph, first sentence:
"Data in the Dam Construction Permit Application (see Appendix A: Doc 02) indicate the E.W. Brown Main ~~*Fly Ash*~~ Pond is underlain…"

Second paragraph, third sentence:
"The same rock treatment requirements were included on the 2006 construction drawings for the adjacent Auxiliary ~~*Ash*~~ Pond Dam; however…"

Page 7-3, first sentence, paragraph 3 under *7.1.6 Critical Geological Conditions and Seismicity*:
Third paragraph, first sentence
"Drawings of the 1990 expansion of the existing Main ~~*Fly Ash p*~~Pond Dam indicate that isolated…"

Fourth paragraph, first sentence:
"The Design Report includes boring logs from several geotechnical explorations at the Main ~~*Fly Ash*~~ Pond."

Page 7-5, section *7.2 ADEQUACY OF SUPPORTING TECHNICAL DOCUMENTATION*
First and second sentences:
"Structural stability documentation is limited for the existing Main ~~*Fly Ash*~~ Pond. However, there is adequate information in the design report for the expansion and reconfiguration of the ~~*Fly Ash*~~ Pond to assess…"

Page 7-5, first sentence, paragraph under *7.3 ASSESSMENT OF STRUCTURAL STABILITY*
First sentence of paragraph, and reformat the following bullets:
"Overall, the structural stability of the Main ~~*Fly Ash*~~ Pond embankment appears to be…"

- There were no indication of scarps, sloughs, depressions or bulging anywhere along the dam;
- Boils, sinks or uncontrolled seepage was not observed along the slopes, groins or toe;
- The computed factors of safety comply with accepted criteria.

Note: Reformat bullets listed above.

Page 8-1, section *8.1 OPERATIONAL PROCEDURES*
Second paragraph, first and second sentence:
"Prior to being taken out of service, the Main ~~*Fly Ash*~~ Pond Dam was operated…"
"A new Operations Plan and Emergency ~~*Operation*~~ Action Plan are being prepared for the expanded and reconfigured Main ~~*Fly Ash*~~ Pond."
Note: A dam breach analysis for the Main Pond was completed in November of 2009, and incorporated into an Impoundment Emergency Action Plan for the Main Pond in January 2010.

Third paragraph, first and second sentence:
"Discharge from the outflow structure is to ~~*an unnamed tributary to*~~ Herrington Lake. The facility ~~*NPDES*~~ KPDES permit (KY0002020) has expired, but remains in effect under applicable state regulations."

Note: A new permit has been issued and will be effective on March 1, 2010.

Page 8-1, section *8.2 MAINTENANCE OF THE DAM AND PROJECT FACILITIES*
First sentence:
"Maintenance procedures for the Main ~~*Fly Ash*~~ Pond include:"

Page 9-1, section *9.1.1 Surveillance Inspections*
First paragraph, first sentence:
"Surveillance inspections of the Main ~~*Fly Ash*~~ Pond are conducted weekly."

Page 9-1, section *9.1.2 Annual Inspections*
First paragraph, third sentence:
"Some of the recommendations made in the ATC Associates report have been ~~*overtaken by commencement of*~~ addressed by the construction of the new facility configuration; e.g., the emergency spillway has been abandoned using procedures prescribed by the design engineer of record and new primary and ~~*emergency*~~ secondary spillways designed."

Page 9-1, section *9.2 INSTRUMENTATION MONITORING*
First paragraph, first and second sentence:
"The Main ~~*Fly Ash*~~ Pond monitoring system consisted of a contained series of piezometers."

Page 9-1, second paragraph under *9.2 INSTRUMENTATION MONITORING*
"A network of piezometers is included in the design of the expanded and reconfigured Main ~~*Fly Ash*~~ Pond."

COAL COMBUSTION DAM INSPECTION CHECKLIST FORM
E.W. Brown Generating Station – Main ~~*Fly Ash*~~ Pond
Date: ~~*October 26, 2009*~~ October 20, 2009
Note: Engineers from Dewberry conducted the site assessment on the Auxiliary Pond on October 20, 2009.

Comment section, bottom page:
Inspection Issue #2: Main ~~*fly ash*~~ pond has been dewatered and is currently out of services for expansion.

Inspection Issue #7 & 8: Foundation preparation underway to expand the main ~~*fly ash*~~ pond.

First page of Coal Combustion Waste (CCW) Impoundment Inspection
Impoundment Name: Main ~~*Ash*~~ Pond
Name of Impoundment: Main ~~*Ash*~~ Pond